

Notice of Allowability

Applicant(s)

09/975,344

Examiner

Andrew Schechter

Applicant(s)

TANADA ET AL.

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the filing of 8 March 2004.
2. ☒ The allowed claim(s) is/are 1-8.
3. ☒ The drawings filed on 10 October 2001 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 10/10/01
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

In the title:

The title has been changed to "Liquid crystal display apparatus having flexible substrate and concave faces".

End of examiner's amendment.

Allowable Subject Matter

2. Claims 1-8 are allowed.
3. The following is an examiner's statement of reasons for allowance:

The prior art does not disclose the device of claim 1, in particular the limitation of a liquid crystal display apparatus comprising a flexible substrate and many concave faces having the inner surface that is a part of the spherical surface formed continuously on the surface, of one of the substrates, facing the liquid crystal side. The closest prior art is discussed below. Claim 1 is therefore allowed, as are claims 2-8 which depend from claim 1.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 6,621,542 to *Aruga* discloses an LCD with two substrates and a liquid crystal layer, where one substrate's inner surface is roughened. It does not disclose having a flexible substrate (its substrates are glass, instead), and does not disclose concave faces with a spherical shape.

U.S. Patent No. 6,538,711 to *Funahata et al.* discloses a similar device, except the concavities are formed in a plastic layer on a glass substrate, so it does not disclose a flexible substrate.

U.S. Patent No. 6,509,943 to *Baek et al.*, U.S. Patent No. 6,473,145 to *Shim et al.*, and U.S. Patent No. 6,229,586 to *Date et al.* disclose similar devices, except that the spherical concave faces are in a separate layer on the substrate, rather than on the surface of the substrate itself.

U.S. Patent No. 6,141,073 to *Sasaki et al.* and U.S. Patent No. 6,061,112 to *Ukita et al.* disclose similar devices, except that the substrate is glass rather than

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flexible, and the surface is roughened without specifically making spherical concave faces.

U.S. Patent No. 5,550,658 to *Yoshihiro* discloses a similar device, except that the plastic substrate [11a] has roughness which is not specifically made of spherical concavities, and it is intended to be a reflector below an LCD cell, rather than a substrate of an LCD cell.

U.S. Patent No. 5,288,591 to *Blonder* discloses a similar device, with a plastic flexible substrate [8] having spherical concaves faces; however, it is intended to be a reflector below an LCD cell [see Fig. 3], rather than a substrate in an LCD cell.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (571) 272-2302. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AS
Andrew Schechter
18 May 2004


ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800